

TIMELINEZ

Volume 2 Issue 10

OCTOBER 1984

\$1.00

EBZUG ALERT!!!!

OCT. MEETING AND SWAP MEET
CHANGED FROM 18th TO 25th!!!

WORD PROCESSOR CAN BE CUSTOMIZED BY T/S 1000/1500 USERS

by
Norm Lehfeldt

Gordon Young couldn't find a word processor that would do what he wanted on T/S 1000/1500 machines so he wrote his own.

As published in 'T/S Horizons,' No.'s 5, 6 and 7, the program, 'WORM,' offers:

1. Easy entry of text with upper/lower case option.
2. On-screen word wrap.
3. Global editing/insertion.
4. Automatic formatting of the text into justified lines of any length you specify.
5. Auto-repeat on most keys (except punctuation marks).

Most available word processors for the earlier T/S machines are structured to work only with the 2040 printer or some other specific hardware.

This one is different. Because it drops from machine code back into BASIC for printing, it can easily accommodate whatever USR calls or LPRINT CHR\$ routines your printer and interface require.

Once this accommodation is made, you are ready to create whatever BASIC print-formatting routines you need. As an example, I have added a line counter to this copy of the program so that it will skip over the perforations to the top of each page of fan-folded paper.

Some other possible adaptations would be adding a simple file-management program so that individualized form letters and mailing labels could be printed, or perhaps formatting to produce a standard letterhead at the top of each page. Even a format to fill out a printed form could be

devised. The possibilities are limited only by the user's imagination.

Another important advantage is that 'WORM' is compatible with fast LOAD/SAVE routines and with stringy/floppy and disc storage.

As originally published, the program is compatible with the 2040 printer (Provided you don't call for more than 32 columns or lower-case letters).

Drawbacks? Input response becomes sluggish when editing long files (6K is maximum); Screen format is a little quirky and hard to read; If you forget to put in the end-of-text symbol, the program will crash with all of your text after one print-out.

Keying in and de-bugging 3K of machine code is a tedious task--and it was made no easier by some transposed code in REM line 1 in 'T/S Horizons' No. 5! A phone call to the author straightened that out. But if you'd like to try 'WORM,' (and avoid all the hassle) you can order it on tape from:

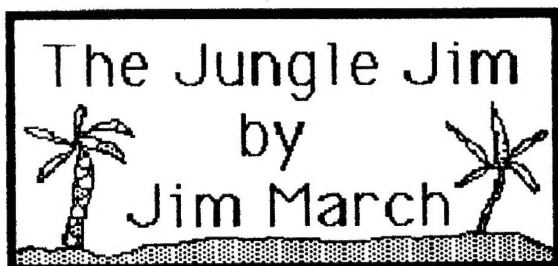
Gordon Young
4616 N. River Road, No. 27
Oceanside, CA 92036

Price is \$15.00.

TIMELINEZ (c) is the joint publication of three Timex/Sinclair User Groups in the San Francisco / Oakland / San Jose Bay Areas. Old and new members are always welcome - so are experienced hardware and software hackers as well as beginners. Hope to see YOU at our next meeting.



PumpKins by Walt Gaby



A call from the wild! Another good month. Keep your letters coming! As for me, my wife and I had a baby boy on September 16. So if I seem a bit tired, that's the reason. This month I will begin the first of two parts on the ROM character generator.

Character Generator BASIC ROM—Table. The character generator table in the BASIC ROM is a set of $8 \times 64 = 512$ bytes beginning at address 7680(1E00H) and ending at address 8191(1FFFH). There are 64 characters defined for the T/S 1000 in the table. Each set of 8 bytes names one character. Stack the 8 bytes, one on top of the other, and you will see how the character is "drawn."

Let's look at an example. If you were to PEEK bytes 7680 to 7687 you would find 8 bytes, all zeroes. The first 8 bytes are used to generate the first character in the T/S 1000 character set. Think of the 8 bytes stacked one under the other and convert from decimal to binary:

(PEEK 7680)	= 0 =	0 0 0 0 0 0 0 0
(PEEK 7681)	= 0 =	0 0 0 0 0 0 0 0
(PEEK 7682)	= 0 =	0 0 0 0 0 0 0 0
(PEEK 7683)	= 0 =	0 0 0 0 0 0 0 0
(PEEK 7684)	= 0 =	0 0 0 0 0 0 0 0
(PEEK 7685)	= 0 =	0 0 0 0 0 0 0 0
(PEEK 7686)	= 0 =	0 0 0 0 0 0 0 0
(PEEK 7687)	= 0 =	0 0 0 0 0 0 0 0

The arrangement of characters shown in the box is how the computer "draws" the characters "space." The zeros represent blank space. Now, since each 8 bytes represents a single character, let's figure out how to find the start address of any character in the table.

10 INPUT A\$

20 LET CHARADDR = 7680 + 8 * CODE A\$

Therefore, the start in the character generator table address of the character "A" is:

$$\text{CHARADDR} = 7680 + 8 * \text{CODE "A"} = 7680 + 8 * 38 = 7984$$

Let's see the way the computer draws this character:

(PEEK 7984)	= 0 =	0 0 0 0 0 0 0 0
(PEEK 7985)	= 60 =	0 0 1 1 1 1 0 0
(PEEK 7986)	= 66 =	0 1 0 0 0 0 1 0
(PEEK 7987)	= 66 =	0 1 0 0 0 0 1 0
(PEEK 7988)	= 126 =	0 1 1 1 1 1 1 0
(PEEK 7989)	= 66 =	0 1 0 0 0 0 1 0
(PEEK 7990)	= 66 =	0 1 0 0 0 0 1 0
(PEEK 7991)	= 0 =	0 0 0 0 0 0 0 0

Doesn't it look like the "A" printed on the TV screen or the printer? Here's a program to draw the characters in large letters on the screen:

```

5 CLS
10 PRINT "WHAT CHARACTER?"
15 INPUT A$
17 IF CODE A$ > 63 THEN GOTO 5
20 CLS
25 PRINT "GENERATOR BYTES FOR—",
   A$(1)
26 PRINT
30 LET CHARADDR=7680+8*CODE A$
35 PRINT TAB 5,"*****"
40 FOR I=CHARADDR TO CHARADDR+7
50 LET DECIMAL=PEEK I
55 REM CONVERT DECIMAL VALUE TO
   BIT PATTERN OF CHAR
58 PRINT TAB 5,"*"
60 FOR P=7 TO 0 STEP -1
65 LET BIT=INT (DECIMAL/(2**P))
70 IF BIT=1 THEN PRINT "X";
75 IF BIT=0 THEN PRINT " ";
80 LET DECIMAL=DECIMAL-BIT*(2**P)
90 NEXT P
100 PRINT "*"
110 NEXT I
115 PRINT TAB 5,"*****"
120 PRINT
130 PRINT "WAITING"
140 PAUSE 65535
150 GOTO 5

```

Sections of this article are reprinted courtesy of The Book Company, Los Angeles, from the book The Timex / Sinclair User's Encyclopedia by G. Phillips and J. March, 1984.

Copies of THE TIMEX/SINCLAIR USER'S ENCYCLOPEDIA are available for \$13.00 (includes shipping and handling) from Jim March, 3216 Partridge Ave., Oakland, CA., 94605 or for \$14.95 plus tax at bookstores (including Stacey's in Palo Alto and San Francisco).

FROM THE BOSTON COMPUTER SOCIETY SUMMER T/S N/L.

PASSWORD SECURITY by John Kameny

This article could also be titled "If you break my code you will break my heart." The BREAK key is used to interrupt a BASIC program. The program halts with some error report on the bottom of the screen. In fact, the STOP statement is just a type of BREAK. Machine code programs ordinarily can not use the BREAK feature.

In many applications you do not want the user to be able to BREAK into your program. For example, you may not want the clerk entering sales slips into a program that calculates payroll commissions to have access to sensitive salary data. But more generally, you don't want users who accidentally hit BREAK to be confronted with a screenful of listings.

The T/S 2068 has a simple way to keep users from BREAKing a program, namely by inserting, as the first program line:

```
10 ON ERR GO TO 10
```

This causes conditions which would otherwise generate an error report to execute GO TO 10 instead. Interestingly, a normal termination, where the program goes past the last line, will halt the program--so put a STOP statement at the end when using this technique.

Unfortunately, this simple technique prevents anyone from BREAKing a running program. A better method would allow users who knew a "secret" password to be able to stop the program. The following short routine does just that.

```
10 ON ERR GO TO 9000
20 REM your program here
30 GO TO 20
9000 REM password routine
9010 LET ps="secret"
9020 BEEP 1,1
9030 LET qs=""
9040 LET as=INKEY$
9050 IF as=INKEY$ THEN GO TO 9050
9060 LET qs=qs+as
9070 IF LEN ps=LEN qs THEN GO TO 9040
9080 IF ps=qs THEN ON ERR RESET
9090 ON ERR CONTINUE
```

The variable ps holds the password and can be changed to any string. Lines 9030 to 9070 are used to debounce the user's input. It takes advantage of the fact that null string "" can be added to the input qs at will. The BEEP at 9020 is necessary to indicate to the user to start entering the password. This is because the BREAK feature is disabled while in the routine, so the user can get out of sync.

FROM CPT Charles R. Byler
HQ USAREUR & 7th Army
Box 1882
APO, NY 09063

Dear Timelinez,

An interesting tidbit for TS1000/X81 owners: To load and stop auto-run machine code programs, enter as a direct command FAST, then BANK USE 836. Play the program. Program will load and stop with report code 0/X.

For TS2068 owners disturbed by the lack of S/U, simply do as I did. Replace the first 16K ROM with a Spectrum ROM. The cost of a Spectrum ROM by mail order from the UK is approximately 27 pounds (about \$9). Spectrum S/U such as Tasword, Manic Miner, etc. then runs perfectly. Savings are substantial. Tasword for the Spectrum costs £12 (about \$16); the U.S. version for the 2068 costs \$50.

OOPS!!!!

THE BANTA SOFTWARE "IS THE PRINTER ON OR OFF" LISTING FOR THE T/S-1000 (PPS.66) HAS AN ERROR.

LINE 2 SHOULD READ:

POKE 16517,71

ALSO, OF COURSE, LINES 9997 AND 9998 ARE INCOMPLETE AS SHOWN, BUT EASILY FIXED.

I HAVE ADDED THIS ROUTINE TO "HI RES PRINTER GRAPHICS" (G. RUSSELL ELECTRONICS) SO THAT A MENU (ALSO ADDED TO THE PROGRAM) LETS ME KNOW IF I HAVE FORGOTTEN THE PRINTER. THIS IS VERY HANDY SINCE THIS PROGRAM CRASHES AND MUST BE RELOADED IF THE PRINTER IS OFF WHEN IT IS RUN.

THANK YOU BANTA SOFTWARE.

SINCERELY,

MIKE MINUTOLI -EBZUG

SINCLAIR RESEARCH LTD. EXPANDS - OPENS NEW OFFICES IN

MIDDLE EAST AND SOUTH EAST ASIA **PRESS RELEASE FROM MARY REINMAN OF SINCLAIR RESEARCH IN BOSTON.**

Sinclair Research Ltd., the British personal computer manufacturer, has recently opened sales offices to accomodate burgeoning computer markets in the Middle East and South East Asia, as part of an international expansion program. Sinclair, whose worldwide sales now exceed three million units, sees tremendous potential in both markets for its personal computers.

Sinclair already has a considerable foothold in the Middle East with an established distributor network in place. Key markets include Saudi Arabia, Egypt and the Gulf States.

Sinclair's current computer production exceeds 150,000 units per month. The company's newest model, the 68008-based QL has been sold by mail order in the UK for six months and will be available in retail stores there beginning this month, with export sales to follow.

▲ COZY NOOK FOR MACHINE CODE IN THE TS2068

FROM THE
CAPITOL
AREA T/S
USERS GRP.
IN MARYLAND.

The area in RAM used for Bank switching starts at 25365, (in the single display mode) and contains 323 bytes. This space can be used to hold machine code, so long as bank switching is not used. I have tested this area by loading it with zeros and by using it for machine code and have experienced no difficulty with the operation of the TS2068.

Unused fixed addresses are located in the system variable area at 23681, 23728-9, and 23747.

C9

Brian Nield

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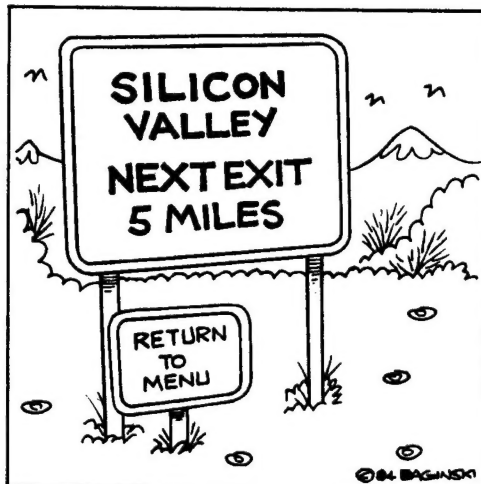
E. McGhee
Suite 150, 10127 - 121 Street
EDMONTON, Alberta, Canada
T5N 3X1

"Softsmiles"

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COMPUTER CALENDAR

OCTOBER

6 Computer Swap America
Santa Clara Co. Fairgrounds
(415) 366-6644

18 EAST BAY MEETING CHANGED
TO NEXT THURSDAY, 10/25/84!

21 Peninsula User Group
ROM Switch installation
(415) 359-3198 1 pm.

25 East Bay Z80 User Group
Timex/Sinclair Swap Meet
(415) 234-3310 7:30 pm.

30 Silicon Valley TS User Group
(408) 738-2888 X4536 7 pm.

NOVEMBER

3 & 4 Computer Supermarket Personal
Computer Bargain Show, 10 to
5, Santa Clara County Fair-
grounds, (415) 340-9113.

15 East Bay Z80 User Group
(415) 234-3310 7:30 pm.

18 Peninsula User Group
(415) 359-3198 1 pm.

27 Silicon Valley TS User Group
(408) 738-2888 X4536 7 pm.

TIMES AND LOCATIONS MAY DIFFER, PLEASE CALL FIRST.

MEMBERSHIP SCHEDULE

FULL (NEWSLETTER AND S/V LIBRARY PRIVILEGES) \$15/YR

PARTIAL (NEWSLETTER ONLY) \$10/YR

For more information contact:

PENINSULA USER GROUP

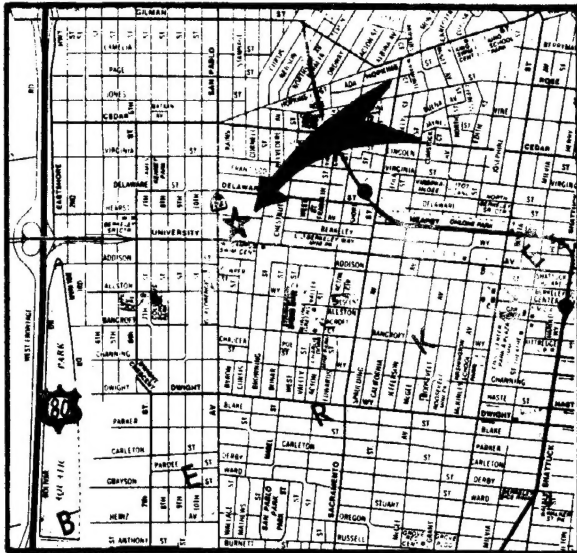
GEORGE MOCKRIDGE
263 GATEWAY NO. 107
PACIFICA, CA 94044
(415) 359-3198

EAST BAY Z80 USER GROUP

JOEL BRODY
3807 ELSTON
OAKLAND, CA 94602
(415) 531-6566 OR (415) 234-3310

SILICON VALLEY SINCLAIR/TIMEX USER GROUP

RITA CARR
P.O. BOX 4133
SANTA CLARA, CA 95054
(408) 738-2888 X4536



EBZUG
East Bay Z80 User Group
654 40th Street
Richmond, CA 94805
(415) 234-3310 or 531-6566

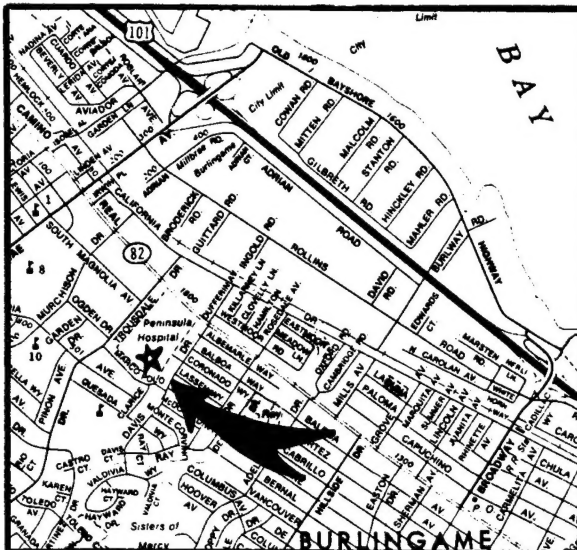
PRESIDENT Joel Brody
NEWSLETTER EDITOR Rick Link

EBZUG meets the third Thursday of each month at:

WEST BRANCH BERKELEY PUBLIC LIBRARY at the corner of University and San Pablo. Meetings start at 7:30 pm. Bring equipment and power strips.

UPCOMING MEETINGS:

OCTOBER 25
NOVEMBER 15



PENINSULA USER GROUP - PUG
263 Gateway No. 187
Pacifica, CA 94044
(415) 359-3198

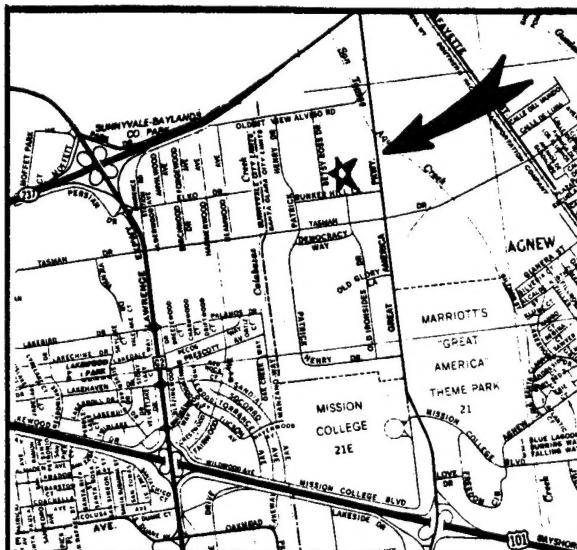
PRESIDENT George Mockridge
LETTER EDITOR Frank Moura

PUG meets the third Sunday of each month at:

PENINSULA HOSPITAL, 1783 EL CAMINO, BURLINGAME. 1 pm. Meet room on lower level. Use North entrance. Bring equip. & extension cords if possible.

UPCOMING MEETINGS:

OCTOBER 21
NOVEMBER 18



Silicon Valley SINCLAIR/THX User Group (SVS/THUG)
P.O. BOX 4133
Santa Clara, CA 95054-0133
(408) 738-2888 X4536

PRESIDENT Rita Carr
NEWSLETTER EDITOR Bill Miller

SVS/THUG meets the last Tuesday of each month at:

Dysan Corp. Headquarters
5201 Patrick Henry Drive
Santa Clara, CA

(Please use North entrance by the loading dock)

UPCOMING MEETINGS:

OCTOBER 30
NOVEMBER 27

8-16K Switch for Cheetah 64K Rampacks by Doug Hoiles

Last year I purchased the English made Cheetah 64 kilobyte rampack for the sole reason of its very low price. Fortunately, it turned out to be a good quality unit, but with two flaws: virtually no documentation and no way to switch out the 8-16k block to enable the use of other add-on peripherals that operate from ROMs permanently wired to use this address space. This was no problem initially, but about 6 months later I purchased a word processor module with ROM software that occupied this space. Naturally they were incompatible. My options were to buy a new, smaller RAM that did not occupy this space, buy a switchable RAM for well over \$100, write only very short letters (under 2K), or figure out for myself how to modify the Cheetah to switch out the 8-16K block. I chose the latter, but considering how little I knew about computer logic, it wasn't easy.

First, I had to study the board and draw a schematic. I probably did not need the entire schematic, but not knowing what I was doing, I figured that too much information was better than not enough, so I effectively completed it. I then borrowed a Texas Instruments TTL handbook that showed the function of the logic chips in the package so I could decode the operation of the device. I also had to contact MOSTEC for information on their 64k dynamic RAMs. I still do not know how everything works, but I was able to figure out which traces had to be cut and where to attach the jumper wires to the DPDT switch which I mounted through a small hole cut in the back of the case. On the second try! I still do not know why my first try was unsuccessful, but I have two short pieces of wire rejoining traces erroneously cut that first time. It looks kind of messy, but it works.

If you wish to make this modification for yourself, here is how to go about it. There are probably other ways that would work too as there are usually more than one way to do something in digital logic, but this approach works by blanking the column adjust strobe to pin 15 of all RAM chips when it would otherwise be strobing the 0-16k addresses, thus preventing "refresh" of the dynamic memory. 0-8k must also be blanked since the Sinclair ROM works in these addresses and is so blanked in the factory unit. I will not cover the theory of the logic further as that would be too lengthy, but I will be happy to discuss this with anyone who wishes to call me at (408) 737-1776, at least to the limited extent of my understanding.

First, buy the smallest double pole, double throw switch that you can find. I mounted a slide switch on the inside of the back of the case so that the slide just barely sticks above the surface of the case through the hole I cut in it. The switch stays with the board on disassembly and is secured to the case with two small wood screws which, when assembled, screw into two 1/8" lengths of 3/16 dowels glued to the switch or you could probably use sheet metal screws thru the wing holes. You will also need some short lengths of small gauge, flexible wire. I used 22

gauge wire because I had some handy, but I recommend 28 gauge stranded with thin insulation for flexibility and ease of wiring. It must, of course, be solderable.

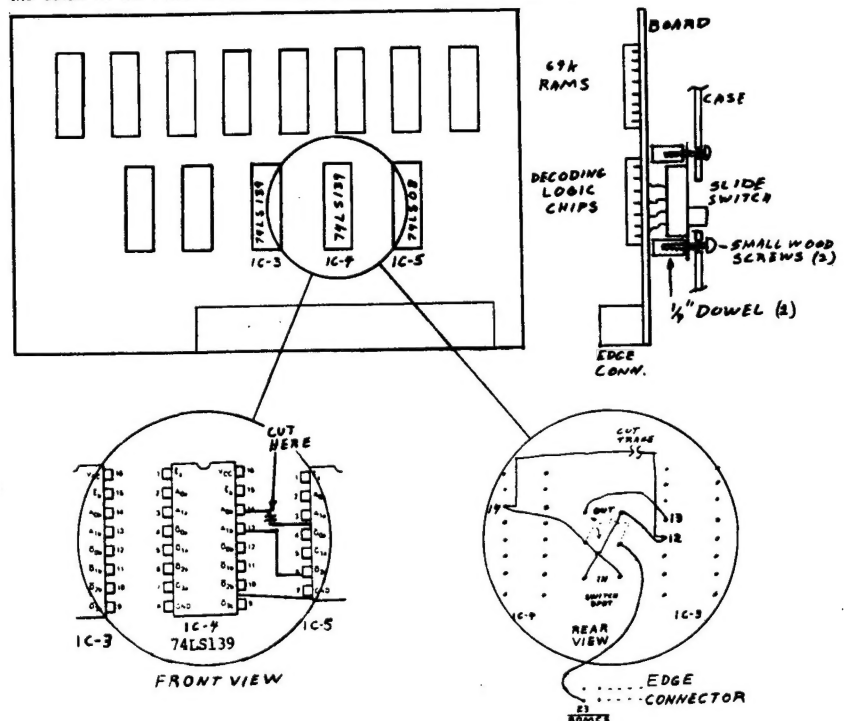
Next, remove the board from the case. See figure 1. The top eight ICs are 64 kilobit dynamic RAMs. The bottom five ICs contain the decoding and addressing logic. The left two ICs are 74LS157s and serve primarily to direct data to or from the correct addresses in the RAMs. The next two are 74LS139s and it is in this area that you must modify the existing circuit and attach the new switch leads. Figure 2 is a front view of IC4 (showing parts of IC3 and IC5) and shows a trace which must be cut running from pin 14 of IC4, between pins 3 and 4 of IC5 to ROMCS (pin 23, bottom) on the edge connector. The other trace which must be cut is on the back of the board and is shown in figure 3 running from pin 14 of IC4 to pin 12 of IC3. Cut the leads where shown as pin 12 of IC3 and pin 14 of IC4 must be isolated from each other as well as from the edge connector.

Four wires to the switch and two jumpers on the switch all solder on the back of the board and the detail in figure 3 should be adequate to show you how to wire it. Use the schematic and the detail of the 74LS139 chip and you should

have no trouble figuring out where to cut and where to solder. If unsure use an ohm meter to trace all leads before cutting or attaching your leads. All that you are doing is changing the ROMCS output signal from pin 12 to pin 13 of IC3 in the "out" position and back to pin 12 in the "in" position. In both switch positions, this output signal goes to pin 14 of IC4 and to the edge connector.

I should point out a possible problem before turning you loose. While my word processor module works fine occupying this address space with the switch in the "out" position, my Hunter CMOS RAM board does not. It works fine by itself, but not with the Cheetah. I have not yet taken the time to determine if it is a decoding problem with my modification or an unrelated problem, but if you wish to make the modification for this use, you may want to investigate further before acting.

As with any modifications to hardware, I take no responsibility if it does not work, you do it wrong or if Cheetah may have modified the circuit so things are possibly not as described (unlikely). Work slowly, be careful, understand before you cut, check with someone else before acting if you have any doubts and you should have no problems.



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GRAPHING DATA by Donald H. Marks

This listing is from an article in last month's *Timelinez* and is printed with permission from ZX - COMPUTING.

The listing begins at 8900 to allow Graph-It to be merged on top of the spreadsheet program *Screencalc* by Banta Software.

```

8900 REM GRAPHICS SUBPROGRAM
8901 BORDER 3: PAPER 6: INK 1: C
LS
8903 POKE 23658,8
8905 PRINT AT 1,3;"GRAPH IT BY"
8907 PRINT AT 3,11;"MENU"
8912 PRINT AT 5,2;"1-ENTER DATA"
8915 PRINT AT 7,2;"2-CHOOSE DOT"
8918 PRINT AT 9,2;"3-CHOOSE PLOT"
8921 PRINT AT 11,2;"4-DRAW GRAPH"
8924 PRINT AT 13,2;"5-REGRESSION"
8927 PRINT AT 15,2;"6-RETURN TO"
8928 PRINT AT 17,2;"7-SUIT PROGR"
8930 PRINT AT 21,1;"ENTER OPTION"
8933 INPUT Z$
8936 IF Z$="7" THEN GO TO 8933
8937 LET A=VAL Z$
8938 CLS
8939 IF A=1 THEN GO TO 8954
8940 IF A=2 THEN GO TO 8961
8941 IF A=3 THEN GO TO 8912
8942 IF A=4 THEN GO TO 8942
8943 IF A=5 THEN GO TO 8943
8944 IF A=6 THEN GO TO 10
8945 IF A=7 THEN STOP
8954 BORDER 2: PAPER 1: INK 7: C
LS
8957 DIM B(50): DIM X(3,50): DIM
Y(3,50): DIM A$(10): DIM B$(10)
8960 PRINT AT 1,5;"DATA ENTRY"
8963 LET G=0: LET H=0
8966 INPUT AT 3,2;"NUMBER OF LIN"
ES = "": LINES
8969 FOR J=1 TO LINES
8972 PRINT AT 3,2;"NUMBER OF DAT"
A PAIRS FOR LINE # "J"; IS :
8975 BEEP .5,20: INPUT B(J)
8978 IF B(J)=0 THEN GO TO 1162
8981 PRINT AT 4,8;B(J)
8984 FOR I=1 TO B(J)
8987 PRINT AT 5,5;"X";I;"="
8990 INPUT X(J,I)
8993 PRINT AT 5,9;X(J,I)
8996 BEEP .1,20
8999 PRINT AT 10,5;"Y";I;"="
9002 INPUT Y(J,I)
9005 PRINT AT 10,9;Y(J,I)
9008 BEEP .1,20
9011 PRINT AT 5,9;" ": PRINT
AT 10,9;" "
9014 NEXT I
9017 NEXT J
9020 PRINT AT 12,1;"ENTER GRAPH"
TITLE
9023 INPUT A$
9026 PRINT AT 12,20;A$
9029 PRINT AT 14,1;"ENTER X-AXIS"
LABEL
9032 INPUT B$
9035 PRINT AT 14,20;B$
9038 PRINT AT 16,1;"ENTER Y-AXIS"
LABEL
9041 INPUT C$
9044 PRINT AT 16,20;C$
9047 PRINT AT 18,1;"X-MIN="
9050 INPUT C
9053 PRINT AT 18,7;C
9056 PRINT AT 18,12;"X-MAX="
9059 INPUT D
9062 PRINT AT 18,18;D
9065 PRINT AT 20,1;"Y-MIN="
9068 INPUT E
9071 PRINT AT 20,7;E
9074 PRINT AT 20,12;"Y MAX="
9077 INPUT F
9080 PRINT AT 20,18;F
9083 PAUSE 100
9086 CLS
9089 PRINT AT 5,2;"X AXIS MARK I"
INTERVAL IS
9092 INPUT Y
9095 PRINT AT 5,28;Y
9098 PRINT AT 10,2;"Y AXIS MARK"
INTERVAL IS
9101 INPUT Z
9104 PRINT AT 10,28;Z
9107 PAUSE 100
9110 CLS: PRINT AT 5,1;"DO YOU"
WISH TO HAVE A COPY OF
9113 PRINT AT 7,1;"THE DATA PAIR"
S ENTERED
9116 PRINT AT 11,2; INVERSE 1: F
LASH 1;"ENTER Y OR N"
9119 INPUT D$
9122 IF D$="Y" THEN GO TO 8900
9125 LPRINT TAB 6;"TITLE ";A$
9128 LPRINT
9131 FOR J=1 TO LINES
9134 LPRINT AT 3,2;"DATA SET # "
J
9137 LPRINT TAB 10;"X";TAB 21;"Y"
9140 LPRINT TAB 9;"----";
9143 FOR I=1 TO B(J)
9146 LPRINT TAB 9;X(J,I);
Y(J,I)
9149 NEXT I
9152 LPRINT: LPRINT
9155 NEXT J
9158 GO TO 8900
9161 BORDER 4: PAPER 6: INK 2: C
LS
9164 REM CHARACTER LETTER IS G
9167 PRINT AT 1,5;"CHARACTER SH"
DIN G(50)
9170 PRINT AT 4,2;"OPTION 1: "
9173 PRINT AT 6,2;"OPTION 2: "
9176 PRINT AT 12,2;"OPTION 3: "
9179 FOR J=1 TO LINES
9182 PRINT AT 14,1; INVERSE 1: F
LASH 1;"ENTER YOUR CHOICE FOR LI"
NE # "J"; (1,2, OR 3)
9183 PRINT AT 18,18;" "
9185 INPUT G(J)
9188 IF G(J)=1 THEN LET G(J)=46
9191 IF G(J)=2 THEN LET G(J)=42
9194 IF G(J)=3 THEN LET G(J)=43
9197 PRINT AT 18,2;"YOUR CHOICE"
IS
9200 PRINT AT 18,18;CHR$(G(J))
9203 PAUSE 150
9204 BEEP .5,20
9206 NEXT J
9209 GO TO 8900
9212 BORDER 5: PAPER 7: INK 2: C
LS
9215 PRINT AT 1,5;"PLOT CHOICE"
9218 LET H=0
9218 PRINT AT 5,2;"OPTION 1: POI"
NTS ONLY
9221 PRINT AT 10,2;"OPTION 2: PO"
INTS JOINED BY
9224 PRINT AT 11,12;"STRAIGHT LI"
NES
9227 PRINT AT 15,4; INVERSE 1: F
LASH 1;"ENTER YOUR CHOICE"
9230 INPUT H
9233 IF H<1 OR H>2 THEN GO TO 92
27
9236 GO TO 8900
9239 IF H=0 THEN LET H=1
9240 IF H=0 THEN LET G=46
9242 BORDER 5: PAPER 7: INK 0: C
LS
9245 LET I=48: LET J=32
9248 PLOT I,J: DRAW 0,120
9251 PLOT I,J: DRAW 200,0
9254 LET K=17
9257 PLOT I,J: DRAW -3,0
9260 LET L=(F-E)/Z
9263 FOR A=1 TO L
9266 LET J=J+INT(120/L)
9269 PLOT I,J: DRAW -3,0
9272 NEXT A
9275 IF F=0 THEN LET L=(F-E)/Z:
IF F=0 THEN LET L=((E-F)/Z)+1
9278 LET G=E
9281 FOR I=1 TO L+1
9284 PRINT AT K,2;G
9287 LET G=(G+Z)
9290 LET K=(K-(17/(L+1)))
9293 NEXT I
9296 LET I=48: LET J=32
9299 LET L2=(D-C)/Y
9302 PLOT I,J: DRAW 0,-3
9305 FOR A=1 TO L2
9308 LET I=I+INT(200/L2)
9311 PLOT I,J: DRAW 0,-3
9314 NEXT A
9317 IF D=0 THEN LET L2=(D-C)/Y:
IF D=0 THEN LET L2=((D-C)/Y)+1
9320 LET K2=5: LET U=C
9323 FOR A=1 TO L2+1
9326 PRINT AT 19,K2;U
9329 LET U=(U+Y)
9332 LET K2=INT K2+(30/(L2+1))
9335 NEXT A
9338 PRINT AT 21,8;B$
9341 PRINT AT 0,8;A$
9344 LET N=6
9347 FOR I=1 TO 10
9350 PRINT AT N,0;C$(I)
9353 LET N=N+1
9356 NEXT I
9359 LET M=0: LET N=N+C
9362 LET M2=0: LET M2=M2+E
9365 REM PLOT POINTS
9368 FOR J=1 TO LINES
9371 LET P0=32: LET Q0=48
9374 FOR A=1 TO B(J)
9377 LET O=((X(J,A)-M)/(D-M))
9380 LET Q=INT((O+25)+.5)
9383 LET P=((Y(J,A)-M2)/(F-M2))+
.5
9386 LET P=INT((P-17)+.5)
9389 PRINT AT P,0;CHR$(G(J))
9392 IF H=2 THEN GO TO 9404
9395 NEXT A
9398 NEXT J
9401 GO TO 9425
9403 REM JOIN LINES
9406 LET Z5=1
9407 LET P1=INT(((P/21)-1)+.175)
9410 LET O1=(O+8)
9413 DRAW (O1-O0),(P1-P0)
9416 LET P0=P1: LET O0=O1
9419 LET Z5=Z5+1
9420 IF Z5=8(J) THEN NEXT J
9422 GO TO 9395
9425 DIM E$(1): INPUT "COPY (Y/N"
) ? "E$
9428 IF E$="N" THEN GO TO 10
9431 IF E$="Y" THEN COPY
9434 GO TO 8900
9437 BORDER 6: PAPER 4: INK 0: C
LS
9440 PRINT AT 1,6;"LINEAR REGRES"
SION
9443 PRINT AT 4,2;"TEST NAME IS"
9446 FOR J=1 TO LINES
9449 LET O3=0: LET E3=0: LET F3=
0: LET G3=0: LET H3=0
9452 FOR I=1 TO B(J)
9455 LET O3=O3+X(J,I)
9458 LET E3=E3+Y(J,I)
9461 LET F3=F3+X(J,I)*X(J,I)
9464 LET G3=G3+Y(J,I)*Y(J,I)
9467 LET H3=H3+X(J,I)*Y(J,I)
9470 NEXT I
9473 LET L3=H3-((O3+E3)/B(J))
9476 LET M3=F3-((O3+O3)/B(J))
9479 LET N3=L3/H3
9482 LET O3=O3/B(J)
9485 LET P3=E3/B(J)
9488 LET Q3=SQR(M3*(G3-((E3+E3)
/B(J))))
9491 LET R3=L3/Q3
9494 LET S3=P3-(N3+O3)
9497 PRINT AT 6,2;"THE SLOPE FOR"
LINE # "J"; IS : "N3
9500 PRINT AT 8,2;"THE INTERCEPT"
IS : "S3
9503 PRINT AT 10,2;"HENCE THE EQ"
UATION IS : "R3
9506 PRINT AT 12,5;"Y= "N3;"X
+ "S3
9509 PRINT AT 14,1;"THE CORRELAT"
ION COEFFICIENT IS : "R3
9512 PRINT AT 18,2;"R0P=1/Y/N"
9515 DIM J$(1): INPUT J$
9521 IF J$="Y" THEN GO TO 9528
9524 PRINT AT 18,2;"
9527 COPY
9528 NEXT J
9530 GO TO 8900

```

** T/S UPDATE **

George Mockridge recieved his ROM switch kit in the mail Monday the 9th and will be installing it at the PUG meeting, 10/21. Will be \$54.95 at Sunset after the 20th. TO BE REVIEWED NEXT ISSUE

SMART TERM II modem software for the Westridge 2050 Modem is now available for \$29.95 on tape from Sunset Electronics. TO BE REVIEWED NEXT ISSUE

Sunset Electronics currently has 24 Spectrum programs including *Ant Attack* that will run on your 2068 with the help of an emulator or a Spectrum ROM.

EBZUG screwed up! Their swap meet scheduled for 10/18 will be postponed one week to 10/25, same location. See you there!

PLEASE HELP US IDENTIFY OTHER T/S HARDWARE-SOFTWARE SOURCES

Mountaineer Software

115 North 7th Avenue
Pades City, MU 26159
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ANNOUNCING !!!

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The RIVER CITIES SMART BBS is open 24 hours, 7 days a week at (304) 652-1416. Give us a call, and try us out!

P.S. When you call, leave me a message, in care of TIMEX SYBOP!

SPECIAL NOTICE

AT THE NEXT PUG MEETING: We will open up a 2068 and install one of the new ROMSWITCH devices from Russell Electronics. The ROMSWITCH will let you run most of the Spectrum S/W on the 2068.

We will also look inside the 2068 and point out the screws that can be used to adjust color and overcome the "crawlies" that occur on some computers.

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